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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
CASCHERA, ANTONIO A	
ART UNIT	**PAPER NUMBER**
2676	

DATE MAILED: 02/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/671,237	CROW ET AL.	
	Examiner	Art Unit	
	Antonio A Caschera	2676	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-33 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-33 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 24 September 2003 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 9/24/03.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1-5, 7-13, 15, 16 and 33 are rejected under 35 U.S.C. 102(e) as being anticipated by Brokenshire et al. (U.S. Publication 2002/0158885 A1).

In reference to claim 1, Brokenshire et al. discloses an improved method, apparatus and computer implement instructions for generating antialiased lines for display in a data processing system (see paragraph 8, lines 1-4). Brokenshire et al. discloses the system receiving a gamma correction table or function from an application and storing the table or function in storage (see paragraph 41, lines 1-5). Brokenshire et al. also discloses the system comprising a rasterization engine, using the gamma correction table or function to generate gamma correction values for a pixel representative of text and images to be displayed (see paragraph 31, lines 1-17 and paragraph 32, lines 1-3). Brokenshire et al. discloses a gamma correction unit including a coverage interpolation unit, among other elements, which identifies how much of a pixel is covered by a line (see paragraph 51, lines 1-5 and paragraph 52, 1-4). Note, the office interprets the line of Brokenshire et al. equivalent to the applicant's "primitive" claim element.

Brokenshire et al. further discloses the coverage interpolation unit assigning coverage values to pixels and reading the gamma correction table using the pixel coverage values as indices into the table (see paragraph 32, lines 1-5 and paragraph 52, lines 1-4). Brokenshire et al. discloses calculating a gamma corrected coverage value for only pixels covered by the line (see paragraph 8, lines 7-10) from coverage values and gamma correction data (see paragraph 53, lines 1-14) and #902, 914, "Gamma Corrected Coverage" and "Final Pixel Value" of Figure 9). Brokenshire et al. discloses performing such gamma correction techniques in order to correct for artifacts or aliasing found in text, points, lines or triangles by adjusting pixel intensities (see paragraphs 6-7). Note, since Brokenshire et al. discloses gamma correction adjusting pixel intensities of a display, the office interprets that Brokenshire et al. inherently discloses gamma correction in order to at least partially compensate for a nonlinear response in the display as such a response is directly related to display driver voltages and pixel intensities.

In reference to claim 2, Brokenshire et al. discloses all of the claim limitations as applied to claim 1 above in addition, Brokenshire et al. discloses a gamma correction unit including a coverage interpolation unit, among other elements, which identifies how much of a pixel is covered by a line (see paragraph 51, lines 1-5 and paragraph 52, 1-4). Note, the office interprets the line of Brokenshire et al. equivalent to a "vector graphics primitive" as recited, as vectors are commonly represented as lines.

In reference to claims 3 and 13, Brokenshire et al. discloses all of the claim limitations as applied to claims 1 and 12 respectively. Brokenshire et al. discloses a gamma correction unit including a coverage interpolation unit, among other elements, which identifies how much of a

pixel is covered by a line (see paragraph 51, lines 1-5 and paragraph 52, 1-4). Note, the office interprets the line of Brokenshire et al. equivalent to the applicant's "primitive" claim element.

In reference to claim 4, Brokenshire et al. discloses all of the claim limitations as applied to claim 1 above in addition, Brokenshire et al. discloses calculating a gamma corrected coverage value for only pixels forming the line (see paragraph 8, lines 7-10). Even further, Brokenshire et al. discloses that gamma correction is usually performed on pixels neighboring edges of primitives (see paragraph 6, lines 5-10).

In reference to claim 5, Brokenshire et al. discloses all of the claim limitations as applied to claim 1 above in addition, Brokenshire et al. discloses using gamma corrected coverage values in place of coverage interpolation unit calculated values to perform the antialiasing of lines, text, points or triangles (see paragraph 7 and #902, 914 and "Gamma Corrected Coverage" of Figure 9).

In reference to claims 7 and 16, Brokenshire et al. discloses all of the claim limitations as applied to claims 5 and 12 respectively. Since Brokenshire et al. discloses receiving graphics data for display including primitives, performing gamma correction on the primitives to form antialiased lines and displaying the antialiased lines (see paragraph 8, lines 6-11), the office interprets that gamma correction is performed on each pixel of the antialiased image, the image of Brokenshire et al. contains these lines.

In reference to claim 8, Brokenshire et al. discloses all of the claim limitations as applied to claim 1 above in addition, Brokenshire et al. discloses that the gamma correction table is "run time loadable" since values for the table are generated within an application implementing user input (see paragraph 35, lines 2-8 and #400 and 402 of Figure 4). Brokenshire et al. further

discloses receiving user input to generate the values within the gamma correction table and storing the values within memory (see paragraph 33, lines 1-3 and paragraph 35, lines 2-6 and #400 and 402 of Figure 4). Note, the office interprets that since Brokenshire et al. discloses allowing and receiving user input to determine the gamma correction table values, Brokenshire et al. inherently discloses generating a GUI having some sort of gamma correction control options.

In reference to claim 9, Brokenshire et al. discloses all of the claim limitations as applied to claim 8 above in addition, Brokenshire et al. discloses the application "enabling" a class of primitives (lines) for gamma correction by sending the line data to a rasterization engine and setting up a gamma table or function for performing gamma correction on the line data (see paragraph 31, lines 1-4 and 8-13).

In reference to claim 10, Brokenshire et al. discloses all of the claim limitations as applied to claim 8 above. Since, Brokenshire et al. discloses receiving user input to generate gamma correction values, the office interprets that the gamma correction values are generated dependent upon the display type implemented in the graphics system as certain displays have certain voltage characteristics directed towards pixel intensities therefore requiring specific gamma correction adjustments. Therefore the office interprets Brokenshire et al. to inherently disclose the feature of selecting a gamma correction for a display type.

In reference to claims 11 and 15, Brokenshire et al. discloses all of the claim limitations as applied to claims 1 and 12 respectively. Brokenshire et al. discloses the coverage interpolation unit identifying the pixels covered by the line including a "not covered at all" state (see paragraph 52, lines 1-4). Note, the office interprets that since Brokenshire et al. discloses that only pixels covered by the line are gamma corrected (see paragraph 8, lines 9-10), therefore

not requiring gamma correction table indices to be assigned to those pixels which are not covered, Brokenshire et al. inherently discloses that those pixels which are not covered by the line are assigned a zero coverage value.

In reference to claim 12, claim 12 is equivalent in scope to the combination of claims 1 and 8 above and therefore is rejected under similar rationale. In addition, Brokenshire et al. also discloses the system comprising both a CPU and graphics processor (see paragraph 30 and #202 and 218 of Figure 2).

In reference to claim 33, claim 33 is equivalent in scope to the combination of claims 1 and 8 above and therefore is rejected under similar rationale. In addition, Brokenshire et al. further discloses the system comprising a computer program stored on a computer readable medium performing the above disclosed gamma correction techniques (see paragraphs 23-24 and 27).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 25-27, 29 and 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brokenshire et al. (U.S. Publication 2002/0158885 A1).

In reference to claim 25, claim 25 is equivalent in scope to claim 1 and therefore is rejected under similar rationale. In addition, Brokenshire et al. discloses the system comprising a

graphics adapter (#218 of Figure 2) which further comprises a rasterization engine to receive primitive data and produce a matrix of pixels (see paragraph 31, lines 3-8), a coverage interpolation unit to calculate a coverage value per pixel of a line (see paragraph 50, lines 1-5, paragraph 51, lines 1-2, paragraph 52, lines 1-4 and paragraph 30, lines 3-4) and a gamma correction table to store gamma correction values (see paragraph 51, lines 1-5 and #914 of Figure 3). Brokenshire et al. discloses a host processor application generating graphics data to be displayed by the graphics adapter (see paragraph 30, lines 4-7 and paragraph 31, lines 1-2). The host processor of Brokenshire et al. is not explicitly disclose as being a part of the graphics adapter however, it would have been obvious to one of ordinary skill in the art to shift the location of the host processor application to be included in the graphics adapter of Brokenshire et al., since it has been held to be within the general skill of a worker in the art to relocate such an element as the exact position would not greatly effect the overall operation of the system and such particular positioning is a manner of engineering design choice. *In re Japikse, 86 USPQ 70 (CCPA 1950).*

In reference to claim 26, Brokenshire et al. discloses all of the claim limitations as applied to claim 25 above, Brokenshire et al. discloses that the gamma correction table is "run time loadable" since values for the table are generated within an application implementing user input (see paragraph 35, lines 2-8 and #400 and 402 of Figure 4).

In reference to claim 27, Brokenshire et al. discloses all of the claim limitations as applied to claim 26 above, Brokenshire et al. further discloses receiving user input to generate the values within the gamma correction table and storing the values within memory (see paragraph 33, lines 1-3 and paragraph 35, lines 2-6 and #400 and 402 of Figure 4).

In reference to claims 29 and 32, Brokenshire et al. discloses all of the claim limitations as applied to claims 25 and 31 respectively, Brokenshire et al. further discloses receiving user input to generate the values within the gamma correction table and storing the values within memory (see paragraph 33, lines 1-3 and paragraph 35, lines 2-6 and #400 and 402 of Figure 4). Note, the office interprets that since Brokenshire et al. discloses allowing and receiving user input to determine the gamma correction table values, Brokenshire et al. inherently discloses generating a GUI having some sort of gamma correction control options.

In reference to claim 30, Brokenshire et al. discloses all of the claim limitations as applied to claim 29 above in addition, Brokenshire et al. discloses a host processor (#202) and main memory (#204) connected to the graphics adapter (#218) via a bus (#206 of Figure 2).

In reference to claim 31, claim 31 is equivalent in scope to the combination of claims 25 and 30 and therefore is rejected under similar rationale.

3. Claims 6, 14, 17-24 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brokenshire et al. (U.S. Publication 2002/0158885 A1) in view of Gosset et al. (U.S. Patent 6,606,093 B1).

In reference to claims 6, 14 and 28, Brokenshire et al. discloses all of the claim limitations as applied to claims 5, 12 and 27 respectively above. Although Brokenshire et al. discloses blending pixel color values with a frame buffer color (see paragraph 53), Brokenshire et al. does not explicitly disclose performing the blending with a weight assigned to the pixels given by the gamma corrected coverage value and a weight assigned to background pixels being one minus the gamma corrected coverage value. Gosset et al. discloses an improved technique for antialiasing by gamma correction of pixel intensity of covered pixels (see column 2, lines 41-

42). Gosset et al. discloses using a gamma corrected coverage value of a pixel in alpha blending by blending the pixel color with the color of background objects (see column 6, lines 26-32). Gosset et al. specifically discloses performing the blending using the equation aS+(1-a)D where a is the gamma corrected coverage value, S is the source pixel color, and D is the pixel color before rendering the antialiased line or the background color since the previous color of the pixel would now be the background color (see column 6, lines 32-37). Note, the office interprets the "a" value of Gosset equivalent to the gamma corrected coverage value weight given to the antialiased pixel of applicant's claim and the "1-a" equivalent to the one minus the gamma corrected coverage value weight given to the background pixels. It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the antialiasing using gamma correction techniques of Brokenshire et al. with the alpha blending techniques of Gosset et al. in order to reduce the need for extensive computations used in "blurring" pixels to reduce "jaggies" seen in diagonal lines (see column 2, lines 11-26) by providing the above blending equation which uses "standard" computations. Further, Gosset et al. also performs the antialiasing techniques disclosed in the independent and therefore is deemed as directly applicable and combinable with the antialiasing using gamma correction techniques of Brokenshire et al.

In reference to claim 17, Brokenshire et al. discloses an improved method, apparatus and computer implement instructions for generating antialiased lines for display in a data processing system (see paragraph 8, lines 1-4). Brokenshire et al. discloses the system receiving a gamma correction table or function from an application and storing the table or function in storage (see paragraph 41, lines 1-5). Brokenshire et al. discloses a gamma correction unit including a

coverage interpolation unit, among other elements, which identifies how much of a pixel is covered by a line (see paragraph 51, lines 1-5 and paragraph 52, 1-4). Note, the office interprets the line of Brokenshire et al. equivalent to the applicant's "primitive" claim element. Brokenshire et al. further discloses the coverage interpolation unit assigning coverage values to pixels and reading the gamma correction table using the pixel coverage values as indices into the table (see paragraph 32, lines 1-5 and paragraph 52, lines 1-4). Brokenshire et al. discloses calculating a gamma corrected coverage value for only pixels covered by the line (see paragraph 8, lines 7-10) from coverage values and gamma correction data (see paragraph 53, lines 1-14) and #902, 914, "Gamma Corrected Coverage" and "Final Pixel Value" of Figure 9). Brokenshire et al. discloses performing such gamma correction techniques in order to correct for artifacts or aliasing found in text, points, lines or triangles by adjusting pixel intensities (see paragraphs 6-7). Note, since Brokenshire et al. discloses gamma correction adjusting pixel intensities of a display, the office interprets that Brokenshire et al. inherently discloses gamma correction in order to at least partially compensate for a nonlinear response in the display as such a response is directly related to display driver voltages and pixel intensities. Although Brokenshire et al. discloses blending pixel color values with a frame buffer color (see paragraph 53), Brokenshire et al. does not explicitly disclose performing the blending with a weight assigned to the pixels given by the gamma corrected coverage value and a weight assigned to background pixels being one minus the gamma corrected coverage value. Gosset et al. discloses an improved technique for antialiasing by gamma correction of pixel intensity of covered pixels (see column 2, lines 41-42). Gosset et al. discloses using a gamma corrected coverage value of a pixel in alpha blending by blending the pixel color with the color of background objects (see

column 6, lines 26-32). Gosset et al. specifically discloses performing the blending using the equation aS+(1-a)D where a is the gamma corrected coverage value, S is the source pixel color, and D is the pixel color before rendering the antialiased line or the background color since the previous color of the pixel would now be the background color (see column 6, lines 32-37). Note, the office interprets the "a" value of Gosset equivalent to the gamma corrected coverage value weight given to the antialiased pixel of applicant's claim and the "1-a" equivalent to the one minus the gamma corrected coverage value weight given to the background pixels. It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the antialiasing using gamma correction techniques of Brokenshire et al. with the alpha blending techniques of Gosset et al. in order to reduce the need for extensive computations used in "blurring" pixels to reduce "jaggies" seen in diagonal lines (see column 2, lines 11-26) by providing the above blending equation which uses "standard" computations. Further, Gosset et al. also performs the antialiasing techniques disclosed in the independent claims and therefore is deemed as directly applicable and combinable with the antialiasing using gamma correction techniques of Brokenshire et al.

In reference to claim 18, Brokenshire et al. and Gosset et al. disclose all of the claim limitations as applied to claim 17 above. Brokenshire et al. discloses a gamma correction unit including a coverage interpolation unit, among other elements, which identifies how much of a pixel is covered by a line (see paragraph 51, lines 1-5 and paragraph 52, 1-4). Note, the office interprets the line of Brokenshire et al. equivalent to the applicant's "primitive" claim element.

In reference to claim 19, Brokenshire et al. and Gosset et al. disclose all of the claim limitations as applied to claim 17 above. Although Brokenshire et al. discloses that the gamma

correction table is "run time loadable" since values for the table are generated within an application implementing user input (see paragraph 35, lines 2-8 and #400 and 402 of Figure 4), neither Brokenshire et al. nor Gosset et al. explicitly disclose loading the gamma correction table prior to execution of an application however, at the time the invention was made, it would have been obvious to one of ordinary skill in the art to initialize the gamma correction tables of Brokenshire et al. with preset values. Applicant has not disclosed that loading these tables prior to execution of a graphics application provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with "run time" loading of the tables because the values for the gamma correction would be still be provided "on time". Further, pre-loading these tables is a matter of design choice as preferred by the designer and to which best suits the application at hand. Therefore, it would have been obvious to one of ordinary skill in this art to modify Brokenshire et al. to obtain the invention as specified in claim 19. Even further, since the applicant also claims a, "run time" loadable gamma table (see claim 8, for example) as an alternate embodiment, the office believes such a feature to provide no immediate criticality to the application at hand and to further support the matter of design choice.

In reference to claim 20, Brokenshire et al. and Gosset et al. disclose all of the claim limitations as applied to claim 17 above. Brokenshire et al. further discloses receiving user input to generate the values within the gamma correction table and storing the values within memory (see paragraph 33, lines 1-3 and paragraph 35, lines 2-6 and #400 and 402 of Figure 4).

In reference to claims 21 and 22, Brokenshire et al. and Gosset et al. disclose all of the claim limitations as applied to claim 17 above. Brokenshire et al. further discloses receiving user

input to generate the values within the gamma correction table and storing the values within memory (see paragraph 33, lines 1-3 and paragraph 35, lines 2-6 and #400 and 402 of Figure 4). Note, the office interprets that since Brokenshire et al. discloses allowing and receiving user input to determine the gamma correction table values, Brokenshire et al. inherently discloses generating a GUI having some sort of gamma correction control options. Further, text input boxes, drop-down menus, radio buttons, checkboxes, etc. are all known elements of GUI's allowing for selection/enablement of functions.

In reference to claim 23, Brokenshire et al. and Gosset et al. disclose all of the claim limitations as applied to claim 17. Brokenshire et al. discloses the coverage interpolation unit identifying the pixels covered by the line including a "not covered at all" state (see paragraph 52, lines 1-4). Note, the office interprets that since Brokenshire et al. discloses that only pixels covered by the line are gamma corrected (see paragraph 8, lines 9-10), therefore not requiring gamma correction table indices to be assigned to those pixels which are not covered, Brokenshire et al. inherently discloses that those pixels which are not covered by the line are assigned a zero coverage value.

In reference to claim 24, Brokenshire et al. and Gosset et al. disclose all of the claim limitations as applied to claim 17. Since Brokenshire et al. discloses that only pixels that are covered by a line are adjusted (see paragraph 8, lines 9-10) and that pixels not covered by a line are identified by "not covered at all," the office interprets that blending would not be applied to these pixels with "zero" coverage and therefore that, Brokenshire et al. inherently discloses discarding "not covered at all" pixels.

References Cited

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

a. Cloutier (U.S. Patent 6,671,000 B1)

- Cloutier discloses an image processing system allowing for the adjustment of non-linear transfer characteristics of graphics data including gamma correction.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Antonio Caschera whose telephone number is (703) 305-1391. The examiner can normally be reached Monday-Thursday and alternate Fridays between 7:00 AM and 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella, can be reached at (703)-308-6829.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

aac

1/5/05

Matthew C. Bella

MATTHEW C. BELLA
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